

WHAT IS CLAIMED:

1. A condenser microphone employing a wide band stop filter for wideband signals of low frequency and radio frequency, the condenser microphone having improved resistance to electrostatic discharge applied from outside and preventing

5 radio frequency interference to decrease noise, the condenser microphone comprising:

an acoustic module 36 for converting sound pressure into variation of an electric signal;

an amplification means for amplifying the electric signal inputted from the acoustic module 36; and

10 an EM-noise-filtering/ESD-blocking section 32 for blocking a wideband signal having low frequency and radio frequency outputted from the amplification means, blocking introduced electromagnetic waves, radio wave noise, and electrostatic discharge, the EM-noise-filtering/ESD-blocking section including one or

15 combination of a resistor and a capacitor disposed between an input port of the amplification means and the acoustic module 36 and/or between an output port of the amplification means and a ground, the resistor and the capacitor being connected in parallel or in series to each other.

20 2. A condenser microphone as claimed in claim 1, wherein the capacitor and the resistor have a capacitance between 1pF and 100μF and a resistance between 10Ω and 1GΩ, respectively, each of which can be selectively adjusted according to frequency band.

25 3. A condenser microphone as claimed in claim 1, wherein the EM-noise-filtering/ESD-blocking section 32 comprises:

a resistor R11 connected serially between output port of the amplification means and signal output port 34a; and

a capacitor C11 connected between one end of the resistor R11 and ground

GND.

4. A condenser microphone as claimed in claim 3, wherein:

the capacitor C11 has a capacitance selected from the group consisting of
5 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF, 68nF and
100nF; and

the resistor R11 has a resistance selected from the group consisting of 100Ω,
220Ω, 330Ω, 430Ω, 620Ω, 680Ω, 820Ω and 1KΩ.

10 5. A condenser microphone as claimed in claim 1, wherein the EM-noise-filtering/ESD-blocking section 32 comprises:

a first capacitor C21 connected in parallel between output port of the
amplification means and ground port to function as a filter;

15 a second capacitor C22 connected parallel to the first capacitor C21 to
perform an EM-noise-filtering and ESD-blocking function; and

a first resistor R21 connected serially to between an output port of the first
capacitor C21 and an output port of the second capacitor C22 to perform a decoupling
function, so that the EM-noise-filtering/ESD-blocking section has a shape of a
character 'Π'.

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6. A condenser microphone as claimed in claim 5, wherein:

the first capacitor C21 has a capacitance of 10pF or 33pF;

25 the second capacitor C22 has a capacitance selected from the group
consisting of 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF,
68nF and 100nF; and

the first resistor R21 has a resistance selected from the group consisting of
100Ω, 220Ω, 330Ω, 430Ω, 620Ω, 680Ω, 820Ω and 1KΩ.

7. A condenser microphone as claimed in claim 1, wherein the EM-noise-filtering/ESD-blocking section 32 comprises:

a first capacitor C21 connected in parallel between output port of the amplification means and ground port to function as a filter;

5 a second capacitor C22 connected parallel to the first capacitor C21 to perform an EM-noise-filtering function; and

10 a first resistor R21 connected serially to between a ground port GND of the first capacitor C21 and a ground port GND of the second capacitor C22 to perform a decoupling function, so that the EM-noise-filtering/ESD-blocking section has a shape of a character 'inverted Π'.

8. A condenser microphone as claimed in claim 7, wherein:

the first capacitor C21 has a capacitance of 10pF or 33pF;

15 the second capacitor C22 has a capacitance selected from the group consisting of 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF, 68nF and 100nF; and

the first resistor R21 has a resistance selected from the group consisting of 100Ω, 220Ω, 330Ω, 430Ω, 620Ω, 680Ω, 820Ω and 1KΩ.

20 9. A condenser microphone as claimed in claim 5 or claim 7, further comprising a noise-blocking resistor R22 between the acoustic module 36 and input port of the amplification means so as to block electromagnetic noise from being inputted.

25 10. A condenser microphone as claimed in claim 9, wherein the noise-blocking resistor has a resistance selected from the group consisting of 100Ω, 1KΩ, 10KΩ, 100KΩ, and 1MΩ.

11. A condenser microphone as claimed in claim 1, wherein the EM-noise-filtering/ESD-blocking section 32 comprises:

a first and a second capacitor C31 and C32 connected in parallel between output port of the amplification means and ground port; and

5 a first and a second resistor R31 and R32 connected respectively between adjacent ends of the two capacitors C31 and C32, so that the EM-noise-filtering/ESD-blocking section has a shape of a character '#', wherein,

10 the first capacitor C31 performs a filtering function, the second capacitor C32 faced to the first capacitor C31 performs an EM-noise-filtering and electrostatic-discharge-blocking function, and the resistors R31 and R32 performs a decoupling function and an electrostatic-discharge-blocking function.

12. A condenser microphone as claimed in claim 11, wherein:

the first capacitor C31 has a capacitance of 10pF or 33pF;

15 the second capacitor C32 has a capacitance selected from the group consisting of 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF, 68nF and 100nF; and

each of the first and second resistors R31 and R32 has a resistance selected from the group consisting of 100Ω, 220Ω, 330Ω, 430Ω, 620Ω, 680Ω, 820Ω and 1KΩ.

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13. A condenser microphone as claimed in claim 11, further comprising a noise-blocking resistor R33 between the acoustic module 36 and input port of the amplification means so as to block electromagnetic noise from being inputted.

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14. A condenser microphone as claimed in claim 13, wherein the noise-blocking resistor R33 has a resistance selected from the group consisting of 100Ω, 1KΩ, 10KΩ, 100KΩ, and 1MΩ.

15. A condenser microphone as claimed in claim 1, wherein the EM-noise-filtering section 32 comprises a first capacitor C41, a second capacitor C42, and a third capacitor C43 connected in parallel with each other between ground port and 5 output port of the amplification means.

16. A condenser microphone as claimed in claim 15, wherein:
the first capacitor C41 can be selectively adjusted so as to have a capacitance between 10pF and 20pF;
10 the second capacitor C42 can be selectively adjusted so as to have a capacitance between 20pF and 1nF; and
the third capacitor C43 can be selectively adjusted so as to have a capacitance between 1nF and 100 μ F.

15 17. A condenser microphone as claimed in claim 15, wherein, in the EM-noise-filtering/ESD-blocking section 32, a resistor R51 is further connected serially between a signal output end of the second capacitor C42 and a signal output end of the third capacitor C43.

20 18. A condenser microphone as claimed in claim 17, wherein:
the first capacitor C41 is selectively adjusted so as to have a capacitance between 10pF and 20pF;
the second capacitor C42 is selectively adjusted so as to have a capacitance between 20pF and 1nF;
25 the third capacitor C43 has a capacitance selected from the group consisting of 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF, 68nF and 100nF; and
the resistor R51 has a resistance selected from the group consisting of 100 Ω ,

220 Ω , 330 Ω , 430 Ω , 620 Ω , 680 Ω , 820 Ω and 1K Ω .

19. A condenser microphone as claimed in claim 15, wherein, in the EM-noise-filtering section 32, a resistor R51 is further connected serially between a
5 ground end of the second capacitor C42 and a ground end of the third capacitor C43.

20. A condenser microphone as claimed in claim 19, wherein:
the first capacitor C41 is selectively adjusted so as to have a capacitance
between 10pF and 20pF;
10 the second capacitor C42 is selectively adjusted so as to have a capacitance
between 20pF and 1nF;
the third capacitor C43 has a capacitance selected from the group consisting
of 1nF, 1.5nF, 2.2nF, 3.3nF, 4.7nF, 6.8nF, 10nF, 15nF, 22nF, 33nF, 47nF, 68nF and
100nF; and
15 the resistor R51 has a resistance selected from the group consisting of 100 Ω ,
220 Ω , 330 Ω , 430 Ω , 620 Ω , 680 Ω , 820 Ω and 1K Ω .

21. A condenser microphone as claimed in claim 1 or 2, wherein, the
capacitor is a temperature compensating capacitor or a capacitor of high dielectric
20 constant.

22. A condenser microphone as claimed in claim 1, wherein, the
amplification means is one of an amplifier used in a built-in-gain microphone and a
field-effect transistor.